

PATENT COOPERATION TREATY

From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

PCT

NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY (PCT Rule 71.1)

To:

MURGITROYD & COMPANY
Scotland House
165-169 Scotland Street
Glasgow
G5 8PL
GRANDE BRETAGNE

Date of mailing
(day/month/year)

04.11.2009

Applicant's or agent's file reference
P48776.WO.01/NHE

IMPORTANT NOTIFICATION

International application No.
PCT/GB2007/004506

International filing date (day/month/year)
26.11.2007

Priority date (day/month/year)
24.11.2006

Applicant
Pursuit Dynamics PLC.

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary report on patentability and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.
4. **REMINDER**

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary report on patentability. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

The applicant's attention is drawn to Article 33(5), which provides that the criteria of novelty, inventive step and industrial applicability described in Article 33(2) to (4) merely serve the purposes of international preliminary examination and that "any Contracting State may apply additional or different criteria for the purposes of deciding whether, in that State, the claimed inventions is patentable or not" (see also Article 27(5)). Such additional criteria may relate, for example, to exemptions from patentability, requirements for enabling disclosure, clarity and support for the claims.

Name and mailing address of the international
preliminary examining authority:



European Patent Office P.B. 5818 Patentlaan 2
NL-2280 HV Rijswijk - Pays Bas
Tel. +31 70 340 - 2040
Fax: +31 70 340 - 3016

Authorized Officer

Giel-Barragán Ramos

Tel. +31 70 340-3046





PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference P48776.WO.01/NHE	FOR FURTHER ACTION		See Form PCT/PEA/416
International application No. PCT/GB2007/004506	International filing date (<i>day/month/year</i>) 26.11.2007	Priority date (<i>day/month/year</i>) 24.11.2006	
International Patent Classification (IPC) or national classification and IPC INV. B01D19/00			
Applicant Pursuit Dynamics PLC.			
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of <u>6</u> sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p style="margin-left: 20px;">a. <input checked="" type="checkbox"/> <i>sent to the applicant and to the International Bureau</i> a total of <u>3</u> sheets, as follows:</p> <p style="margin-left: 40px;"><input checked="" type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p style="margin-left: 40px;"><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p style="margin-left: 20px;">b. <input type="checkbox"/> (<i>sent to the International Bureau only</i>) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in electronic form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>			
<p>4. This report contains indications relating to the following items:</p> <p style="margin-left: 20px;"><input checked="" type="checkbox"/> Box No. I Basis of the report</p> <p style="margin-left: 20px;"><input type="checkbox"/> Box No. II Priority</p> <p style="margin-left: 20px;"><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p style="margin-left: 20px;"><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p style="margin-left: 20px;"><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p style="margin-left: 20px;"><input type="checkbox"/> Box No. VI Certain documents cited</p> <p style="margin-left: 20px;"><input type="checkbox"/> Box No. VII Certain defects in the international application</p> <p style="margin-left: 20px;"><input type="checkbox"/> Box No. VIII Certain observations on the international application</p>			
Date of submission of the demand 2008-09-24		Date of completion of this report 04.11.2009	
Name and mailing address of the international preliminary examining authority:  European Patent Office P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Fax: +31 70 340 - 3016		Authorized officer Lapeyrère, Jean Telephone No. +31 70 340-2333 <div style="text-align: right;">  </div>	

**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
PCT/GB2007/004506

Box No. I Basis of the report

1. With regard to the **language**, this report is based on
- ☒ the international application in the language in which it was filed
 - ☐ a translation of the international application into , which is the language of a translation furnished for the purposes of:
 - ☐ international search (under Rules 12.3(a) and 23.1(b))
 - ☐ publication of the international application (under Rule 12.4(a))
 - ☐ international preliminary examination (under Rules 55.2(a) and/or 55.3(a))
2. With regard to the **elements*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report):*

Description, Pages

1-14 as originally filed

Claims, Numbers

2-7 as originally filed

1, 8-17 filed with telefax on

24-09-2009

Drawings, Sheets

1/2-2/2 as originally filed

- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/figs
- ☐ the sequence listing (*specify*):
- ☐ any table(s) related to sequence listing (*specify*):

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/figs
- ☐ the sequence listing (*specify*):
- ☐ any table(s) related to sequence listing (*specify*):

5. ☐ This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 70.2 (e)).

**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

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6. ☐ Supplementary international search report(s) from Authority(ies) have been received and taken into account in drawing up this report (Rule 45bis.8(b) and (c)).

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	<u>1-17</u>
	No: Claims	
Inventive step (IS)	Yes: Claims	
	No: Claims	<u>1-17</u>
Industrial applicability (IA)	Yes: Claims	<u>1-17</u>
	No: Claims	

2. Citations and explanations (Rule 70.7):

see separate sheet

Re Item V.

Reference is made to the following documents:

D1: US 2005/011355 A1 (WILLIAMS WILLIAM ROBERT [US] ET AL) 20 January 2005 (2005-01-20)

D2: GB-A-1 205 776 (PARKSON IND EQUIPMENT COMPANY [US]) 16 September 1970 (1970-09-16)

- 1 Amendments filed by the applicant are fulfilling the requirements of article 34 PCT.

INDEPENDENT CLAIM 1

- 2 The present application does not meet the criteria of Article 33 (1) PCT, because the subject-matter of claim 1 is not inventive in the sense of Article 33 (3) PCT.

Document D2 discloses (the references in parentheses applying to this document):

an apparatus for the removal of volatile elements from a process fluid, comprising:

at least one steam injector (28) adapted to inject steam into the process fluid;

a stripping container (40) adapted to receive process fluid from the steam injector;

a storage vessel (52) adapted to receive process fluid from the stripping container; and

wherein the steam injector comprises:

a hollow body (76 in figure 2) provided with a straight-through passage of substantially constant cross-section with an inlet in communication with the vessel and an outlet in communication with the stripping container for the entry and discharge of process fluid;

a nozzle having convergent-divergent internal geometry (see figure 2) and

opening (84) into the passage intermediate the inlet and outlet thereof;

a nozzle inlet adapted to introduce a supply of steam to the nozzle; and
a mixing chamber (92) located within the passage downstream of the
nozzle.

from which claim 1 differs in that "a check valve is located between the
stripping container and storage vessel and adapted to maintain a
predetermined pressure in the stripping container."

3 Therefore claim 1 is novel in view of D2.

4 The addition of valve between the stripping container and the storage vessel is
merely one of several straightforward possibilities from which the skilled per-
son would select, in accordance with circumstances, without the exercise of
inventive skill. Since no technical effect has been demonstrated for the valve,
claim 1 does not involve an inventive activity in view of D2.

INDEPENDENT CLAIM 11

5 The present application does not meet the criteria of Article 33 (1) PCT,
because the subject-matter of claim 11 is not new in the sense of Article 33(2)
PCT.

Document D2 discloses (the references in parentheses applying to this
document):

a method of removing volatile elements from a process fluid, comprising:

injecting (28) steam (30) into the process fluid (26) in order to atomise
the process fluid and form a vapour - droplet regime;

passing the vapour - droplet regime through a low pressure region (in
figure 2, ref. 92) in which volatile elements within the process fluid are
vaporised;

passing the vapour - droplet regime through a stripping container (40)
maintained at an elevated pressure (passage in page 3, lines 1 and 2
discloses that the separator 50 can be at atmospheric pressure,
therefore the pressure in vessel 40 is above atmospheric pressure. The
expression "elevated pressure" being vague a pressure above
atmospheric pressure is considered as elevated pressure) in order to
vaporise any remaining volatile elements within the process fluid; and

condensing (50) the vapour - droplet regime of the processing fluid and
drawing off any volatile vapours (62).

Therefore claim 11 is not new in view of D2.

Dependant claims 2-10 and 12-17

- 6 Dependent claims 2-10 and 12-17 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of novelty (claim 2, 4, 5, 7, 8, 14, 15, 18) or inventive step (claims 3, 6, 9, 10, 11, 13, 16, 17).
- 6.1 Claims 2, 4, 5, 7, 13, 14 and 17 are disclosed in D1 or D2.
- 6.2 Claims 3, 6, 8, 9, 10, 12, 15 and 16 do not involve any surprising technical effect over the prior art.

CLAIMS:

1. An apparatus for the removal of volatile elements from a process fluid, comprising:

5 at least one steam injector adapted to inject steam into the process fluid;

a stripping container adapted to receive process fluid from the steam injector;

10 a storage vessel adapted to receive process fluid from the stripping container; and

a check valve located between the stripping container and storage vessel and adapted to maintain a predetermined pressure in the stripping container;

wherein the steam injector comprises:

15 a hollow body provided with a straight-through passage of substantially constant cross-section with an inlet in communication with the vessel and an outlet in communication with the stripping container for the entry and discharge of process fluid;

20 a nozzle having convergent-divergent internal geometry and opening into the passage intermediate the inlet and outlet thereof;

a nozzle inlet adapted to introduce a supply of steam to the nozzle; and

25 a mixing chamber located within the passage downstream of the nozzle.

2. The apparatus of Claim 1, wherein the steam injector receives process fluid from the storage vessel.

30 3. The apparatus of Claim 2, wherein the steam injector, stripping container and check valve are located within the vessel.

4. The apparatus of Claim 2, wherein the steam injector, stripping container and check valve are external of the vessel and connected to the vessel by at least one recirculation conduit.

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5. The apparatus of Claim 1, wherein the apparatus is adapted to form part of a process line, wherein the steam injector is adapted to receive process fluid from an upstream section of the process line and the storage vessel is adapted to pass process fluid to a downstream section of the process line.

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6. The apparatus of any of Claims 2 to 5, wherein the storage vessel is a thermally insulated brewing kettle.

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7. The apparatus of any preceding claim, further comprising a pump adapted to pump the process fluid through the apparatus.

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8. The apparatus of any preceding claim, wherein the check valve is a back-pressure valve.

9. The apparatus of any preceding claim, comprising a plurality of steam injectors.

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10. The apparatus of Claim 9, wherein the plurality of steam injectors are positioned in parallel with one another.

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11. A method of removing volatile elements from a process fluid, comprising:

injecting steam into the process fluid in order to atomise the process fluid and form a vapour-droplet regime;

passing the vapour-droplet regime through a low pressure region in which volatile elements within the process fluid are vaporised;

5 passing the vapour-droplet regime through a stripping container maintained at an elevated pressure in order to vaporise any remaining volatile elements within the process fluid; and

condensing the vapour-droplet regime of the processing fluid and drawing off any volatile vapours.

10

12. The method of Claim 11, further comprising:

an initial step of filling a storage vessel with a volume of the process fluid prior to the steam injection; and

a final step of returning the condensed process fluid to the vessel.

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13. The method of Claim 12, wherein the process fluid is returned to the vessel from the stripping container at atmospheric pressure.

14. The method of Claim 12 or Claim 13, wherein the volatile vapours are drawn off in the storage vessel.

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15. The method of any of Claims 11 to 14, wherein the steam is injected into the process fluid in a stream which substantially circumscribes the process fluid.

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16. The method of any of Claims 11 to 15, wherein the process fluid is brewing wort.

17. The method of any of Claims 11 to 16, wherein the injection of steam is continuous.

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